第二 节:springboot整合篇(飞机篇)

1:springboot**整合**jdbc

1.1:**导入的**maven**依赖**

```
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-jdbc</artifactId>
</dependency>

<dependency>
        <groupId>mysql</groupId>
        <artifactId>mysql-connector-java</artifactId>
        <scope>runtime</scope>
</dependency>
```

1.2:**配置相关数据源**:

```
spring:
  datasource:
    username: root
    data-password: 123456
    url: jdbc:mysql://47.104.128.12:3306/tuling-vip
    driver-class-name: com.mysql.jdbc.Driver
```

1.3：**测试**

```
        @Autowired
        private DataSource dataSource;

        @Test
        public void contextLoads() {
        }

        @Test
        public void testDbType() {
                System.out.println("自动装配数据源的类型:"+dataSource.getClass());
        }
```

1.4)jdbc **以及数据源的自动装配原理**

1.4.1)**数据源的自动装配**

```
        /**
         * Tomcat Pool DataSource configuration.
         */
        @ConditionalOnClass(org.apache.tomcat.jdbc.pool.DataSource.class)
        @ConditionalOnMissingBean(DataSource.class)
        @ConditionalOnProperty(name = "spring.datasource.type", havingValue = "org.apache.tomcat.jdbc.pool.DataSource'
        static class Tomcat {

        //配置tomcat 连接池的数据源
                @Bean
                @ConfigurationProperties(prefix = "spring.datasource.tomcat")
```

```
		public org.apache.tomcat.jdbc.pool.DataSource dataSource(
				DataSourceProperties properties) {
			org.apache.tomcat.jdbc.pool.DataSource dataSource = createDataSource(
					properties, org.apache.tomcat.jdbc.pool.DataSource.class);
			DatabaseDriver databaseDriver = DatabaseDriver
					.fromJdbcUrl(properties.determineUrl());
			String validationQuery = databaseDriver.getValidationQuery();
			if (validationQuery != null) {
				dataSource.setTestOnBorrow(true);
				dataSource.setValidationQuery(validationQuery);
			}
			return dataSource;
		}

	}

	/**
	 * Hikari DataSource configuration.
	 */
	@ConditionalOnClass(HikariDataSource.class)
	@ConditionalOnMissingBean(DataSource.class)
	@ConditionalOnProperty(name = "spring.datasource.type", havingValue = "com.zaxxer.hikari.HikariDataSource", ma
	static class Hikari {

		@Bean
		@ConfigurationProperties(prefix = "spring.datasource.hikari")
		public HikariDataSource dataSource(DataSourceProperties properties) {
			HikariDataSource dataSource = createDataSource(properties,
					HikariDataSource.class);
			if (StringUtils.hasText(properties.getName())) {
				dataSource.setPoolName(properties.getName());
			}
			return dataSource;
		}

	}

	/**
	 * DBCP DataSource configuration.
	 */
	@ConditionalOnClass(org.apache.commons.dbcp2.BasicDataSource.class)
	@ConditionalOnMissingBean(DataSource.class)
	@ConditionalOnProperty(name = "spring.datasource.type", havingValue = "org.apache.commons.dbcp2.BasicDataSo
	static class Dbcp2 {

		@Bean
		@ConfigurationProperties(prefix = "spring.datasource.dbcp2")
		public org.apache.commons.dbcp2.BasicDataSource dataSource(
				DataSourceProperties properties) {
			return createDataSource(properties,
					org.apache.commons.dbcp2.BasicDataSource.class);
		}

	}

//通过spring.dataSource.tpye 来指定装配的数据源
	@ConditionalOnMissingBean(DataSource.class)
	@ConditionalOnProperty(name = "spring.datasource.type")
	static class Generic {

		@Bean
		public DataSource dataSource(DataSourceProperties properties) {
```

```
                return properties.initializeDataSourceBuilder().build();
            }

        }

        //用于整合druid 等数据源配置的
        public DataSourceBuilder<?> initializeDataSourceBuilder() {
            return DataSourceBuilder.create(getClassLoader()).type(getType())
                    .driverClassName(determineDriverClassName()).url(determineUrl())
                    .username(determineUsername()).password(determinePassword());
        }

        public T build() {
          //数据源类型
            Class<? extends DataSource> type = getType();
            //t通过反射创建数据源
            DataSource result = BeanUtils.instantiateClass(type);
            maybeGetDriverClassName();
            bind(result);
            return (T) result;
        }
```

1.4.2)jdbcTemplate自动装配

```
@Configuration
@ConditionalOnClass({ DataSource.class, JdbcTemplate.class })
@ConditionalOnSingleCandidate(DataSource.class)
@AutoConfigureAfter(DataSourceAutoConfiguration.class)
@EnableConfigurationProperties(JdbcProperties.class)
public class JdbcTemplateAutoConfiguration {

    @Configuration
    static class JdbcTemplateConfiguration {

        private final DataSource dataSource;

        private final JdbcProperties properties;

        JdbcTemplateConfiguration(DataSource dataSource, JdbcProperties properties) {
            this.dataSource = dataSource;
            this.properties = properties;
        }

    //jdbcTemplate 配置
        @Bean
        @Primary
        @ConditionalOnMissingBean(JdbcOperations.class)
        public JdbcTemplate jdbcTemplate() {
            JdbcTemplate jdbcTemplate = new JdbcTemplate(this.dataSource);
            JdbcProperties.Template template = this.properties.getTemplate();
            jdbcTemplate.setFetchSize(template.getFetchSize());
            jdbcTemplate.setMaxRows(template.getMaxRows());
            if (template.getQueryTimeout() != null) {
                jdbcTemplate
                        .setQueryTimeout((int) template.getQueryTimeout().getSeconds());
            }
            return jdbcTemplate;
        }

    }
```

```
	@Configuration
	@Import(JdbcTemplateConfiguration.class)
	static class NamedParameterJdbcTemplateConfiguration {

		@Bean
		@Primary
		@ConditionalOnSingleCandidate(JdbcTemplate.class)
		@ConditionalOnMissingBean(NamedParameterJdbcOperations.class)
		public NamedParameterJdbcTemplate namedParameterJdbcTemplate(
				JdbcTemplate jdbcTemplate) {
			return new NamedParameterJdbcTemplate(jdbcTemplate);
		}

	}

}
```

测试:

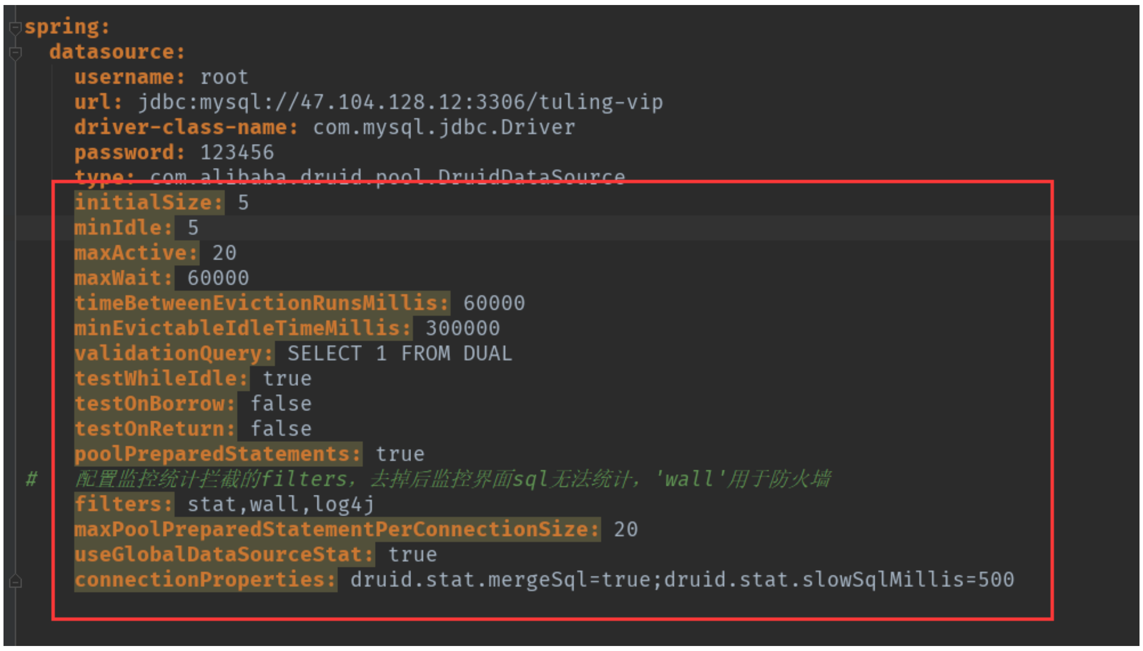
```
	@Autowired
	private JdbcTemplate jdbcTemplate;


	@Test
	public void testDbType() {
		System.out.println("自动装配数据源的类型:"+dataSource.getClass());
	}

	@Test
	public void testJdbcTemplate() {
		List<Map<String,Object>> employeeList = jdbcTemplate.queryForList("select * from employee");

		System.out.println(employeeList.size());
	}
```

2.springboot**如何优雅的整合**druid +**监控**

2.1)**加入**druid**的依赖**

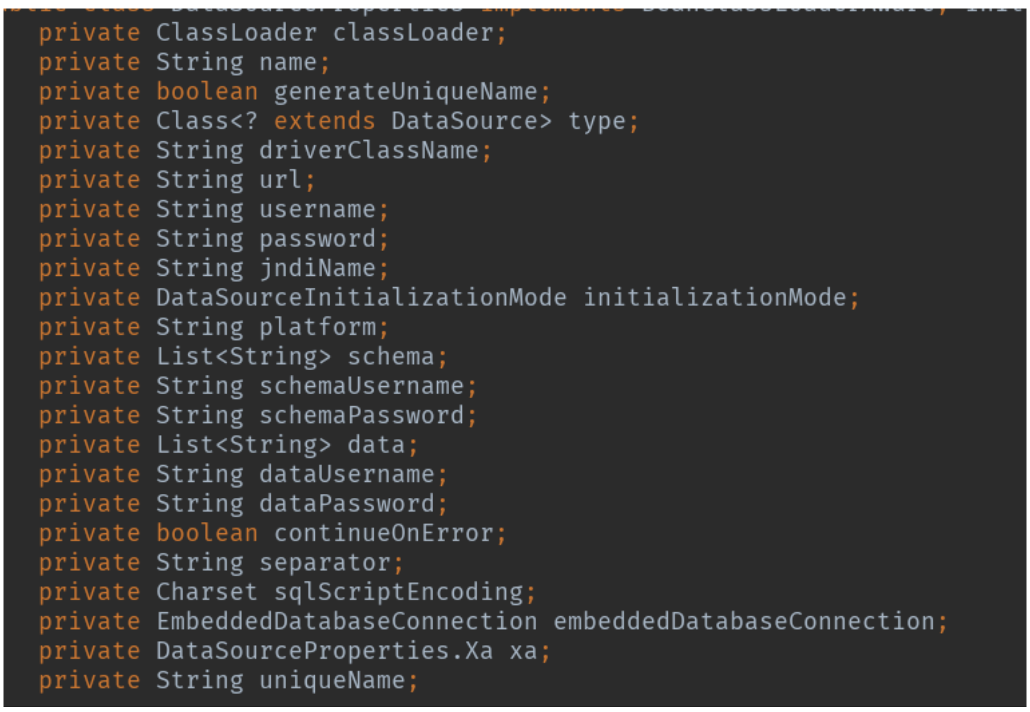
```
<dependency>
	<groupId>com.alibaba</groupId>
	<artifactId>druid</artifactId>
	<version>1.1.10</version>
</dependency>

//自定义属性绑定配置
<dependency>
	<groupId>org.springframework.boot</groupId>
	<artifactId>spring-boot-configuration-processor</artifactId>
	<optional>true</optional>
</dependency>
```

2.2**）配置**druid**的数据源属性**



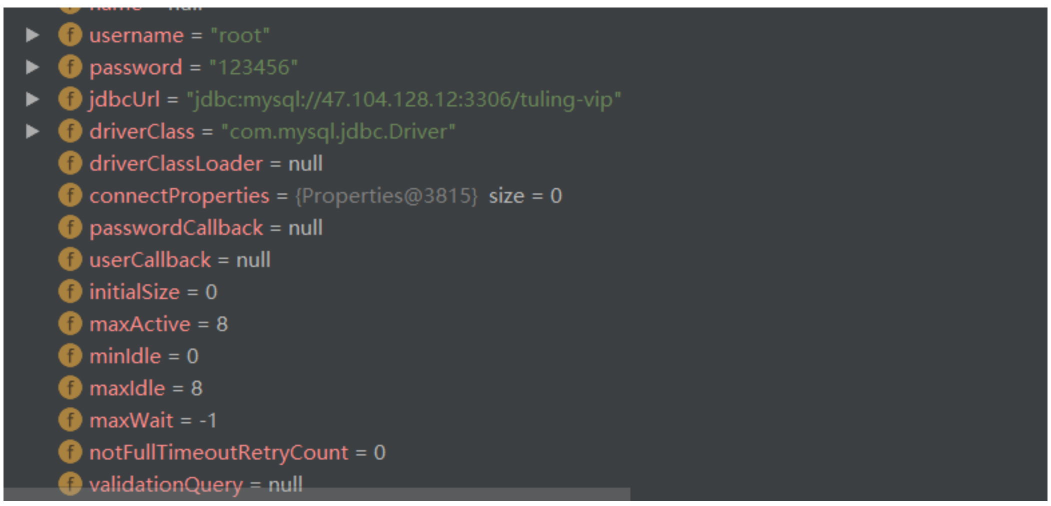
```yaml
spring:
  datasource:
    username: root
    url: jdbc:mysql://47.104.128.12:3306/tuling-vip
    driver-class-name: com.mysql.jdbc.Driver
    password: 123456
    type: com.alibaba.druid.pool.DruidDataSource
    initialSize: 5
    minIdle: 5
    maxActive: 20
    maxWait: 60000
    timeBetweenEvictionRunsMillis: 60000
    minEvictableIdleTimeMillis: 300000
    validationQuery: SELECT 1 FROM DUAL
    testWhileIdle: true
    testOnBorrow: false
    testOnReturn: false
    poolPreparedStatements: true
#   配置监控统计拦截的filters，去掉后监控界面sql无法统计，'wall'用于防火墙
    filters: stat,wall,log4j
    maxPoolPreparedStatementPerConnectionSize: 20
    useGlobalDataSourceStat: true
    connectionProperties: druid.stat.mergeSql=true;druid.stat.slowSqlMillis=500
```

我们发现上面部分 红框 部分是显示黄色，在datasource.properties的文件中，没有属性进行一一映射



```java
    private ClassLoader classLoader;
    private String name;
    private boolean generateUniqueName;
    private Class<? extends DataSource> type;
    private String driverClassName;
    private String url;
    private String username;
    private String password;
    private String jndiName;
    private DataSourceInitializationMode initializationMode;
    private String platform;
    private List<String> schema;
    private String schemaUsername;
    private String schemaPassword;
    private List<String> data;
    private String dataUsername;
    private String dataPassword;
    private boolean continueOnError;
    private String separator;
    private Charset sqlScriptEncoding;
    private EmbeddedDatabaseConnection embeddedDatabaseConnection;
    private DataSourceProperties.Xa xa;
    private String uniqueName;
```

所以我们看到的带红框部分是没有映射到数据源中.



```
▶ f username = "root"
▶ f password = "123456"
▶ f jdbcUrl = "jdbc:mysql://47.104.128.12:3306/tuling-vip"
▶ f driverClass = "com.mysql.jdbc.Driver"
  f driverClassLoader = null
  f connectProperties = {Properties@3815}  size = 0
  f passwordCallback = null
  f userCallback = null
  f initialSize = 0
  f maxActive = 8
  f minIdle = 0
  f maxIdle = 8
  f maxWait = -1
  f notFullTimeoutRetryCount = 0
  f validationQuery = null
```

2.3)**解决办法（优雅）就是我们自己配置一个**druid**数据源**

```
spring:
  datasource:
      druid:
        username: root
        password: 123456
        url: jdbc:mysql://47.104.128.12:3306/tuling-vip
        driverClassName: com.mysql.jdbc.Driver
        initialSize: 5
        minIdle: 5
        maxActive: 20
        maxWait: 60000
        timeBetweenEvictionRunsMillis: 60000
        minEvictableIdleTimeMillis: 300000
        validationQuery: SELECT 1 FROM DUAL
        testWhileIdle: true
        testOnBorrow: false
        testOnReturn: false
        poolPreparedStatements: true
    #   配置监控统计拦截的filters，去掉后监控界面sql无法统计，'wall'用于防火墙
        filters: stat,wall,log4j
        maxPoolPreparedStatementPerConnectionSize: 20
        useGlobalDataSourceStat: true
        connectionProperties: druid.stat.mergeSql=true;druid.stat.slowSqlMillis=500
```

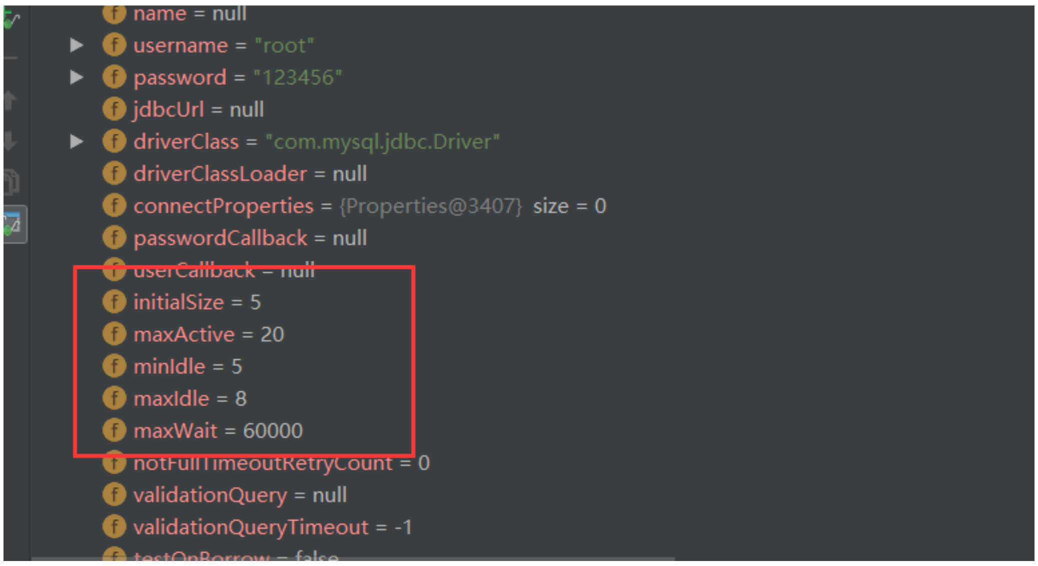
对应的接受配置类(省略了getSet**方法**....)

```
@ConfigurationProperties(prefix = "spring.datasource.druid")  //扫描配置类的属性前缀
public class DruidDataSourceProperties {

    private String username;

    private String password;


    private String jdbcUrl;

    private String driverClassName;

    private Integer initialSize;

    private Integer maxActive;

    private Integer minIdle;

    private long maxWait;

    private boolean poolPreparedStatements;

}
```

自己定制一个druid的配置类

```
@Configuration
@EnableConfigurationProperties(value = DruidDataSourceProperties.class)
public class DruidDataSourceConfig {
    @Autowired
    private DruidDataSourceProperties druidDataSourceProperties;

    @Bean
    public DataSource dataSource() {
        System.out.println(druidDataSourceProperties);
        DruidDataSource druidDataSource = new DruidDataSource();
        druidDataSource.setUsername(druidDataSourceProperties.getUsername());
        druidDataSource.setPassword(druidDataSourceProperties.getPassword());
        druidDataSource.setUrl(druidDataSourceProperties.getJdbcUrl());
        druidDataSource.setDriverClassName(druidDataSourceProperties.getDriverClassName());
        druidDataSource.setInitialSize(druidDataSourceProperties.getInitialSize());
        druidDataSource.setMinIdle(druidDataSourceProperties.getMinIdle());
        druidDataSource.setMaxActive(druidDataSourceProperties.getMaxActive());
        druidDataSource.setMaxWait(druidDataSourceProperties.getMaxWait());
        druidDataSourceProperties.setPoolPreparedStatements(druidDataSourceProperties.isPoolPreparedStatements());
        return druidDataSource;
    }
}
```

再来查看对应的数据源的属性 已经成功的映射到数据源中

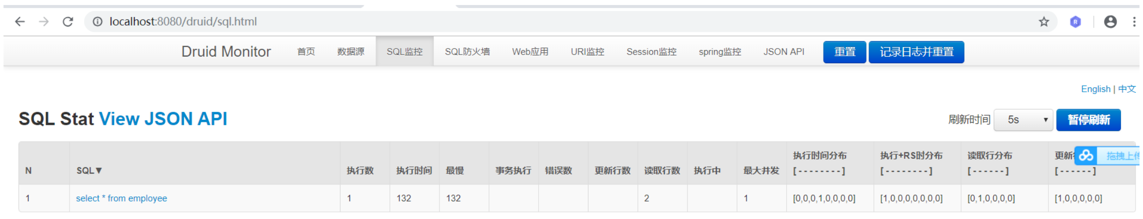


```
name = null
username = "root"
password = "123456"
jdbcUrl = null
driverClass = "com.mysql.jdbc.Driver"
driverClassLoader = null
connectProperties = {Properties@3407} size = 0
passwordCallback = null
userCallback = null
initialSize = 5
maxActive = 20
minIdle = 5
maxIdle = 8
maxWait = 60000
notFullTimeoutRetryCount = 0
validationQuery = null
validationQueryTimeout = -1
testOnBorrow = false
```

2.4)**配置数据源监控，配置一个**statViewSerlvet(**后端管理**) WebStatFilter sql**监控**

```
    /**
     * 配置druid管理后台的servlet
     * @return
     */
    @Bean
    public ServletRegistrationBean statViewSerlvet() {
        ServletRegistrationBean bean = new ServletRegistrationBean(new StatViewServlet(),"/druid/*");
        Map<String,Object> initParameters = new HashMap<>();
        initParameters.put("loginUsername","admin");
        initParameters.put("loginPassword","123456");
        bean.setInitParameters(initParameters);
        return bean;
    }

    @Bean
    public FilterRegistrationBean filterRegistrationBean() {
        FilterRegistrationBean filterRegistrationBean = new FilterRegistrationBean(new WebStatFilter());
        filterRegistrationBean.setUrlPatterns(Arrays.asList("/*"));

        Map<String,Object> initParams = new HashMap<>();
        initParams.put("exclusions","*.js,*.css,/druid/*");
        filterRegistrationBean.setInitParameters(initParams);
        return  filterRegistrationBean;
    }
```

监控访问路径:http://localhost:8080/druid/



SQL Stat View JSON API

N	SQL▼	执行数	执行时间	最慢	事务执行	错误数	更新行数	读取行数	执行中	最大并发	执行时间分布 [--------]	执行+RS时分布 [--------]	读取行分布 [------]	更新 [------]
1	select * from employee	1	132	132				2		1	[0,0,0,1,0,0,0,0]	[1,0,0,0,0,0,0,0]	[0,1,0,0,0,0]	[1,0,0,0,0,0]

3:springboot**整合** mybaits

3.1) **导入**maven**依赖**

```
            <dependency>
                  <groupId>org.springframework.boot</groupId>
                  <artifactId>spring-boot-starter-jdbc</artifactId>
            </dependency>
            <dependency>
                  <groupId>org.springframework.boot</groupId>
                  <artifactId>spring-boot-starter-web</artifactId>
            </dependency>
            <dependency>
                  <groupId>org.mybatis.spring.boot</groupId>
                  <artifactId>mybatis-spring-boot-starter</artifactId>
                  <version>2.0.0</version>
            </dependency>

            <dependency>
                  <groupId>mysql</groupId>
                  <artifactId>mysql-connector-java</artifactId>
                  <scope>runtime</scope>
                  <version>5.1.46</version>
            </dependency>
```

3.2)**让我们看下**mybatis**自动配置类给我们配置了什么组件**

①:**导入了**SqlSessionFactory

②: **导入了**sqlSessionTemplate

③: **导入了**mapperScanner

```
@org.springframework.context.annotation.Configuration
@ConditionalOnClass({ SqlSessionFactory.class, SqlSessionFactoryBean.class })
@ConditionalOnSingleCandidate(DataSource.class)
@EnableConfigurationProperties(MybatisProperties.class)
```

```
@AutoConfigureAfter(DataSourceAutoConfiguration.class)
public class MybatisAutoConfiguration implements InitializingBean {


  1:自动装配了 sqlSessionFactory
  @Bean
  @ConditionalOnMissingBean
  public SqlSessionFactory sqlSessionFactory(DataSource dataSource) throws Exception {
    SqlSessionFactoryBean factory = new SqlSessionFactoryBean();
    factory.setDataSource(dataSource);
    factory.setVfs(SpringBootVFS.class);
    if (StringUtils.hasText(this.properties.getConfigLocation())) {
      factory.setConfigLocation(this.resourceLoader.getResource(this.properties.getConfigLocation()));
    }
    applyConfiguration(factory);
    if (this.properties.getConfigurationProperties() != null) {
      factory.setConfigurationProperties(this.properties.getConfigurationProperties());
    }
    if (!ObjectUtils.isEmpty(this.interceptors)) {
      factory.setPlugins(this.interceptors);
    }
    if (this.databaseIdProvider != null) {
      factory.setDatabaseIdProvider(this.databaseIdProvider);
    }
    if (StringUtils.hasLength(this.properties.getTypeAliasesPackage())) {
      factory.setTypeAliasesPackage(this.properties.getTypeAliasesPackage());
    }
    if (this.properties.getTypeAliasesSuperType() != null) {
      factory.setTypeAliasesSuperType(this.properties.getTypeAliasesSuperType());
    }
    if (StringUtils.hasLength(this.properties.getTypeHandlersPackage())) {
      factory.setTypeHandlersPackage(this.properties.getTypeHandlersPackage());
    }
    if (!ObjectUtils.isEmpty(this.properties.resolveMapperLocations())) {
      factory.setMapperLocations(this.properties.resolveMapperLocations());
    }

    return factory.getObject();
  }



  2:配置了sqlSessionTemplate
  @Bean
  @ConditionalOnMissingBean
  public SqlSessionTemplate sqlSessionTemplate(SqlSessionFactory sqlSessionFactory) {
    ExecutorType executorType = this.properties.getExecutorType();
    if (executorType != null) {
      return new SqlSessionTemplate(sqlSessionFactory, executorType);
    } else {
      return new SqlSessionTemplate(sqlSessionFactory);
    }
  }

  3：自动装配 导入mapperScanner
  public static class AutoConfiguredMapperScannerRegistrar
      implements BeanFactoryAware, ImportBeanDefinitionRegistrar, ResourceLoaderAware {

    private BeanFactory beanFactory;

    private ResourceLoader resourceLoader;

    @Override
    public void registerBeanDefinitions(AnnotationMetadata importingClassMetadata, BeanDefinitionRegistry registry) {

      if (!AutoConfigurationPackages.has(this.beanFactory)) {
        logger.debug("Could not determine auto-configuration package, automatic mapper scanning disabled.");
        return;
      }

      logger.debug("Searching for mappers annotated with @Mapper");

      List<String> packages = AutoConfigurationPackages.get(this.beanFactory);
      if (logger.isDebugEnabled()) {
        packages.forEach(pkg -> logger.debug("Using auto-configuration base package '{}'", pkg));
      }

      ClassPathMapperScanner scanner = new ClassPathMapperScanner(registry);
      if (this.resourceLoader != null) {
        scanner.setResourceLoader(this.resourceLoader);
      }
      scanner.setAnnotationClass(Mapper.class);
      scanner.registerFilters();
      scanner.doScan(StringUtils.toStringArray(packages));

    }

  }
}
```

3.3）把sql写在方法上(mapper文件上必须加上@Mapper注解)

```
@Mapper
public interface EmployeeMapper {

    @Select("select * from employee")
    List<Employee> list();

    @Select("select * from employee where id=#{id}")
    Employee findOne(Integer id);

    @Options(useGeneratedKeys =true,keyProperty = "id")
    @Insert("insert into employee(last_name,email,gender,dept_id)values(#{lastName},#{email},#{gender},#{deptId})")
    int save(Employee employee);

}
```

3.4）把sql写在配置文件上

需要制定配置文件位置

```
#配置mybatis
mybatis:
  configuration:
    map-underscore-to-camel-case: true  开启驼峰命名
  mapper-locations: classpath:/mybatis/mapper/*.xml  指定配置文件的位置
```

4:**整合**Redis

4.1)**导入的**maven**依赖**

```
          <dependency>
              <groupId>org.springframework.boot</groupId>
              <artifactId>spring-boot-starter-data-redis</artifactId>
          </dependency>
```

4.2)**自动装配的组件**

```
@Configuration
@ConditionalOnClass(RedisOperations.class)
@EnableConfigurationProperties(RedisProperties.class)
@Import({ LettuceConnectionConfiguration.class, JedisConnectionConfiguration.class })
public class RedisAutoConfiguration {

   1:自动装配了redis的操作模板类
      @Bean
      @ConditionalOnMissingBean(name = "redisTemplate")
      public RedisTemplate<Object, Object> redisTemplate(
                  RedisConnectionFactory redisConnectionFactory) throws UnknownHostException {
            RedisTemplate<Object, Object> template = new RedisTemplate<>();
            template.setConnectionFactory(redisConnectionFactory);
            return template;
      }

   2：自动装配了StringRedisTemplate模板类
      @Bean
      @ConditionalOnMissingBean
      public StringRedisTemplate stringRedisTemplate(
                  RedisConnectionFactory redisConnectionFactory) throws UnknownHostException {
            StringRedisTemplate template = new StringRedisTemplate();
            template.setConnectionFactory(redisConnectionFactory);
            return template;
      }

}


@Configuration
@ConditionalOnClass({ GenericObjectPool.class, JedisConnection.class, Jedis.class })
class JedisConnectionConfiguration extends RedisConnectionConfiguration {


   redis的链接工厂
      @Bean
      @ConditionalOnMissingBean(RedisConnectionFactory.class)
      public JedisConnectionFactory redisConnectionFactory() throws UnknownHostException {
            return createJedisConnectionFactory();
      }
```

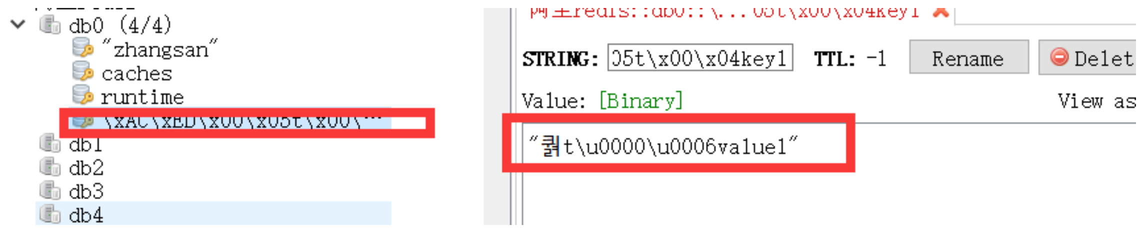
4.3)**所需的配置类,我们去**RedisProperties**配置类 看下可以具体配置哪些属性**

```
@ConfigurationProperties(prefix = "spring.redis")
public class RedisProperties {

      private int database = 0;

      private String url;

      private String host = "localhost";
```

```
        private String password;

        private int port = 6379;

        private boolean ssl;

        private Duration timeout;

        private Sentinel sentinel;

        private Cluster cluster;
}

具体的配置项
spring:
  redis:
    host: 47.104.128.12
    port: 6379
    password: 123456
    jedis:
      pool:
        max-active: 20
        max-idle: 10
        min-idle: 5
```

4.4）**使用**redis **自动配置的默认的**redisTemplate**是使用**jdk**自带的 序列化工具,通过**redis **客户端工具看到的**key value**是 字节形式的**

阅读起来不方便,



STRING: 05t\x00\x04key1   TTL: -1

Value: [Binary]

"킑t\u0000\u0006value1"

我们如何修改 redisTemplate**的序列化工具 就是我们自己配置一个**RedisTemplate

```
@Configuration
public class RedisConfig {

    @Bean
    public RedisTemplate<Object, Object> redisTemplate(RedisConnectionFactory redisConnectionFactory)  {
        RedisTemplate<Object, Object> template = new RedisTemplate<>();
        //设置自己的序列化工具
        template.setDefaultSerializer(new Jackson2JsonRedisSerializer<Object>(Object.class));
        template.setConnectionFactory(redisConnectionFactory);
        return template;
    }
}
```

5）整合Swagger2

5.1)Swagger2**是什么**?

它的出现就是为了方便进行测试后台的restful形式的接口，实现动态的更新，当我们在后台的接口修改了后，swagger可以实现自动的更新，而不需要认为的维护这个接口进行测试

5.2**）为啥要用**Swagger

程序员最喜欢什么？ 最喜欢别人写文档

程序员最不喜欢什么？最不喜欢自己写文旦

5.3)**整合步骤**

第一步:**加入**maven**依赖**

```
          <dependency>
               <groupId>io.springfox</groupId>
               <artifactId>springfox-swagger2</artifactId>
               <version>2.7.0</version>
          </dependency>

          <dependency>
               <groupId>io.springfox</groupId>
               <artifactId>springfox-swagger-ui</artifactId>
               <version>2.7.0</version>
          </dependency>
```

5.4)**加入**swagger2**的配置**

```
@Configuration
public class Swagger2Config {

    @Bean
    public Docket createRestApi() {
        return new Docket(DocumentationType.SWAGGER_2)
                .apiInfo(apiInfo())
                .select()
                .apis(RequestHandlerSelectors.basePackage("com.tuling.controller")) //你需要生成文档所在的包
                .paths(PathSelectors.any())
                .build();
    }

    private ApiInfo apiInfo() {
        return new ApiInfoBuilder()
                .title("springboot利用swagger构建api文档")//文档标题
                .description("简单优雅的restfun风格，http://blog.csdn.net/saytime") //描述
                .termsOfServiceUrl("http://blog.csdn.net/saytime")
                .version("1.0")
                .build();
    }
}
```

5.5)**在配置类上开启**swagger2**的文档**

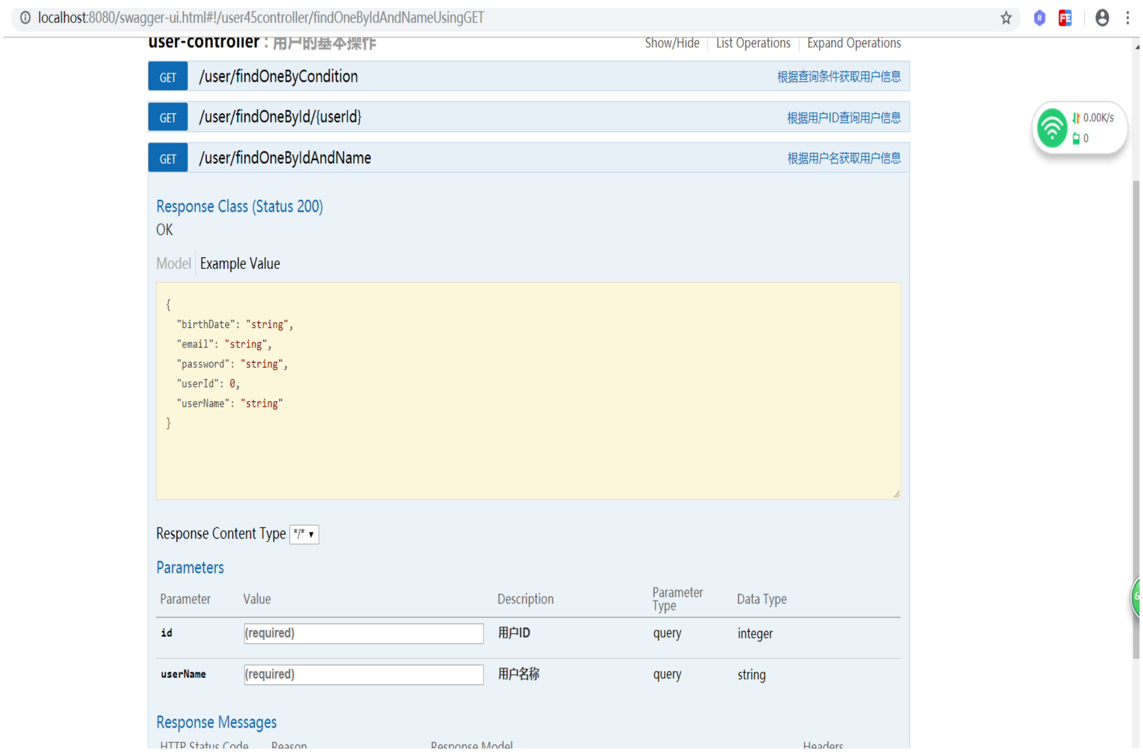
@EnableSwagger2

```
@SpringBootApplication
@EnableSwagger2
public class TulingvipSpringbootSwagger2Application {
```

5.6）**使用示例**:

```
package com.tuling.controller;

import com.tuling.entity.DataNode;
import com.tuling.entity.User;
import com.tuling.entity.UserCondition;
import io.swagger.annotations.*;
import org.springframework.web.bind.annotation.*;

import java.util.ArrayList;
import java.util.List;

/**
 * Created by Administrator on 2019/3/23.
 */
@RestController
@RequestMapping("/user")
@Api(value = "用户服务",description = "用户的基本操作")
public class UserController {

    @ApiOperation(value = "用户列表服务",notes = "查詢所有用戶的列表信息")
    @RequestMapping(value = "/list",method = RequestMethod.GET)
    public List<User> list() {
        List<User> userList = new ArrayList<>();
        for(String key: DataNode.users.keySet()) {
            userList.add(DataNode.users.get(key));
        }
        return userList;
    }

    @ApiOperation(value ="根据用户ID查询用户信息",notes="根据url的id来获取用户详细信息")
    @ApiImplicitParam(name="userId",value = "用户ID",required = true,dataType ="Integer",paramType = "path")
    @RequestMapping(value = "/findOneById/{userId}",method = RequestMethod.GET)
    public User findOneById(@PathVariable("userId") Integer userId) {
        for(String key: DataNode.users.keySet()) {
            User user = DataNode.users.get(key);
            if(user.getUserId() == userId) {
                return user;
            }
        }

        return null;
    }

    @ApiOperation(value = "根据用户名获取用户信息")
    @RequestMapping(value = "/findOneUserName/{userName}",method = RequestMethod.GET)
    public User findOneByName(@ApiParam(value ="用户名",type = "String") @PathVariable("userName") String userName) {
        for(String key: DataNode.users.keySet()) {
            User user = DataNode.users.get(key);
            if(user.getUserName().equals(userName)) {
                return user;
            }
        }

        return null;
    }
    @ApiOperation(value = "根据用户名获取用户信息")
    @ApiImplicitParams({
            @ApiImplicitParam(name = "id", value = "用户ID", required = true, dataType = "int", paramType = "query"),
            @ApiImplicitParam(name = "userName", value = "用户名称", required = true, dataType = "String", paramType = "q
        }
    )
    @RequestMapping(value = "/findOneByIdAndName",method = RequestMethod.GET)
    public User findOneByIdAndName(@RequestParam String userName,@RequestParam Integer id) {
        for(String key: DataNode.users.keySet()) {
            User user = DataNode.users.get(key);
            if(user.getUserName().equals(userName) && id==user.getUserId()) {
                return user;
            }
        }

        return null;
    }

    @ApiOperation(value = "根据查询条件获取用户信息")
    @RequestMapping(value = "/findOneByCondition",method = RequestMethod.GET)
    public User findOneByCondition(UserCondition userCondition) {
        for(String key: DataNode.users.keySet()) {
            User user = DataNode.users.get(key);
            if(user.getUserName().equals(userCondition.getUserName()) &&
                    user.getUserId()==userCondition.getUserId()) {
                return user;
            }
        }
        return null;
    }
}


@ApiModel(value = "用户实体")
public class User {

    public User(Integer userId, String userName, String password, String email, String birthDate) {
        this.userId = userId;
        this.userName = userName;
        this.password = password;
        this.email = email;
        this.birthDate = birthDate;
    }

    @ApiModelProperty(name = "用户id",dataType = "String" ,notes = "用户Id")
    private Integer userId;

    @ApiModelProperty(name = "用户名",dataType = "String" ,notes="用户名")
    private String userName;
    @ApiModelProperty(name = "密码",dataType = "String",notes = "密码")
    private String password;
    @ApiModelProperty(name = "邮箱",dataType = "String" ,notes = "邮箱")
    private String email;
    @ApiModelProperty(name = "生日",dataType = "String" ,notes = "生日")
    private String birthDate;
}
```

5.7)**访问地址**:http://localhost:8080/swagger-ui.html


localhost:8080/swagger-ui.html#!/user45controller/findOneByIdAndNameUsingGET

user-controller : 用户的基本操作 Show/Hide | List Operations | Expand Operations

GET /user/findOneByCondition 根据查询条件获取用户信息

GET /user/findOneById/{userId} 根据用户ID查询用户信息

GET /user/findOneByIdAndName 根据用户名获取用户信息

Response Class (Status 200)
OK

Model Example Value

```
{
  "birthDate": "string",
  "email": "string",
  "password": "string",
  "userId": 0,
  "userName": "string"
}
```

Response Content Type */*

Parameters

Parameter	Value	Description	Parameter Type	Data Type
id	(required)	用户ID	query	integer
userName	(required)	用户名称	query	string

Response Messages

HTTP Status Code Reason Response Model Headers

常用参数解析:

- @Api()用于类;
表示标识这个类是swagger的资源
- @ApiOperation()用于方法;
表示一个http请求的操作
- @ApiParam()用于方法，参数，字段说明;
表示对参数的添加元数据（说明或是否必填等）
- @ApiModel()用于类
表示对类进行说明，用于参数用实体类接收
- @ApiModelProperty()用于方法，字段
表示对model属性的说明或者数据操作更改
- @ApiIgnore()用于类，方法，方法参数
表示这个方法或者类被忽略
- @ApiImplicitParam() 用于方法
表示单独的请求参数
- @ApiImplicitParams() 用于方法，包含多个 @ApiImplicitParam

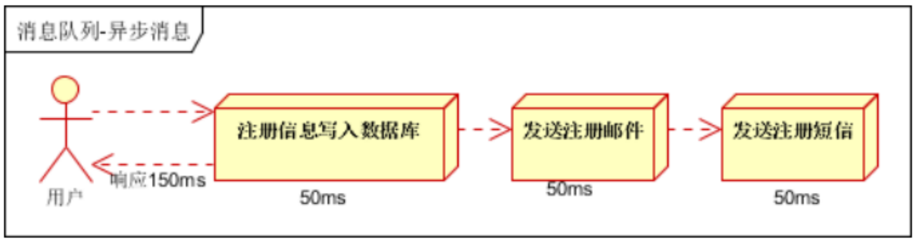
5.7)**整合**rabbitmq

5.7.1）**我们项目中为什么需要使用消息中间件?**

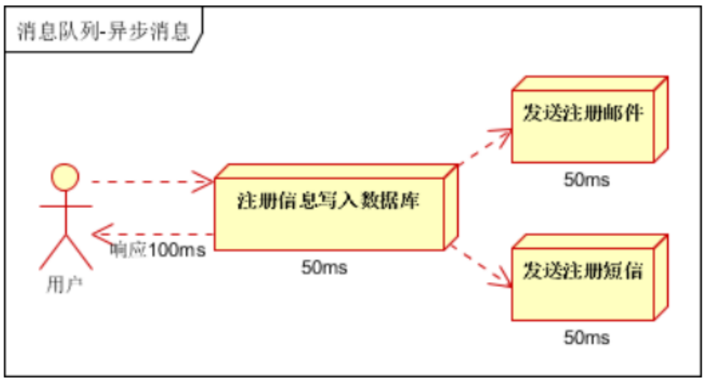
①:异步

场景:用户注册后，把用户数据入库，然后向用户发送一封邮件，然后在发送一条短信

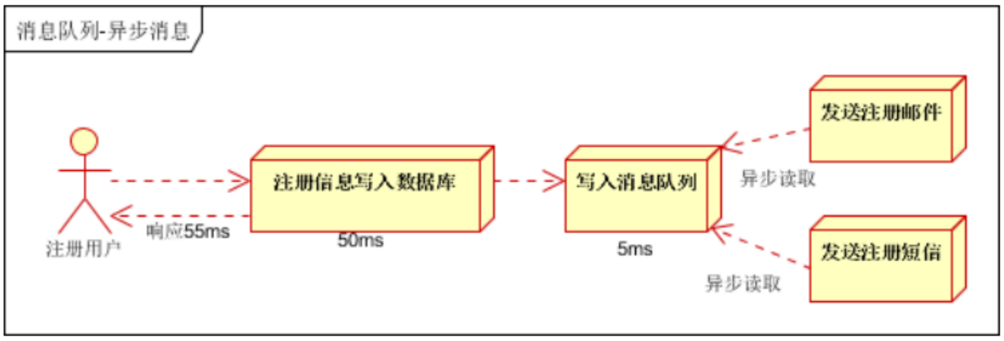
同步等待:150ms



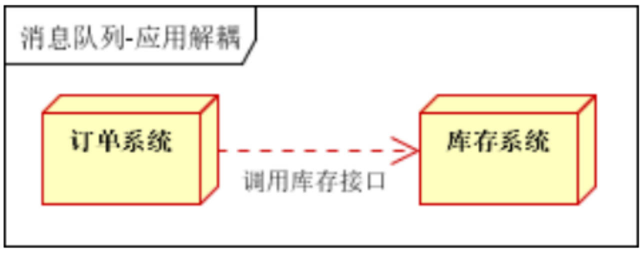
异步发送:用户注册，把用户数据入库，然后通过异步任务分别执行发送邮件和短信

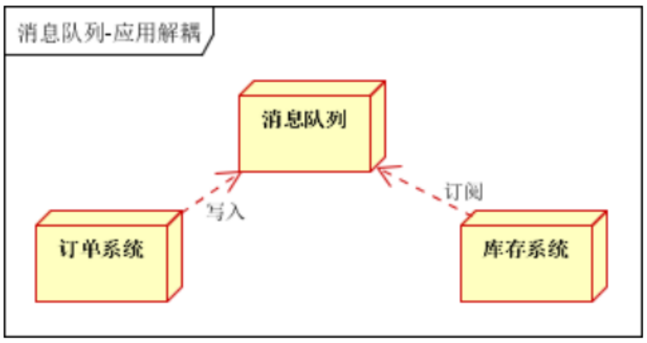


队列形式:用户注册数据入库同时，然后发送消息写入mq中（由于写mq的时间很短，机会可以忽略不计）



②：解耦 （用户下订单成功，然后发送一条减少库存的消息发送到mq中）

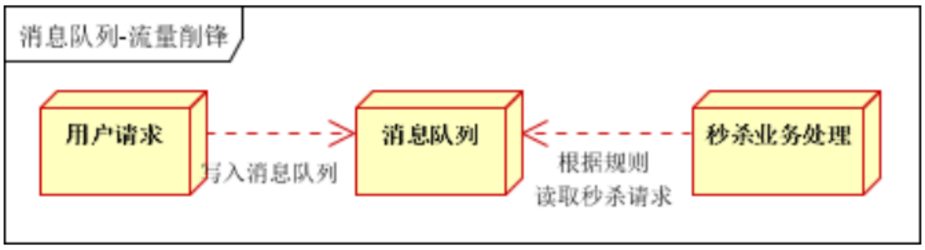




③：流量削峰

比如10W**人来抢**10**个商品，在**Mq**中 设置队列的长度为**10，**若队列长度超过**10，**那么后面的请求直接舍弃**

从而来降低对DB**的压力**



5.7.2）rabbtimq**的核心概念理解**?

①：Publisher **(消息生产者)**

消息的生产者，也是一个向交换器发布消息的客户端应用程序

②：Message (**消息对象**)

消息，消息是不具名的，它由消息头和消息体组成。消息体是不透明的，而消息头则由一系列的可选属性组
成，这些属性包括routing-key（路由键）、priority（相对于其他消息的优先权）、delivery-mode（指出
该消息可能需要持久性存储）等

③：**交换器，用来接收生产者发送的消息并将这些消息路由给服务器中的队列。**

Exchange有4种类型：direct(默认)，fanout(扇形交换机), topic(主题交换机), 和headers(不同交换机)，不同类型的Exchange转发消息的策略有
所区别

④： Queue

消息队列，用来保存消息直到发送给消费者。它是消息的容器，也是消息的终点。一个消息
可投入一个或多个队列。消息一直在队列里面，等待消费者连接到这个队列将其取走。

⑤：Binding
绑定，用于消息队列和交换器之间的关联。一个绑定就是基于路由键将交换器和消息队列连接起来的路由规则，所以可以将交换器理解成一个由绑定构成的路由表。
Exchange 和Queue的绑定可以是多对多的关系

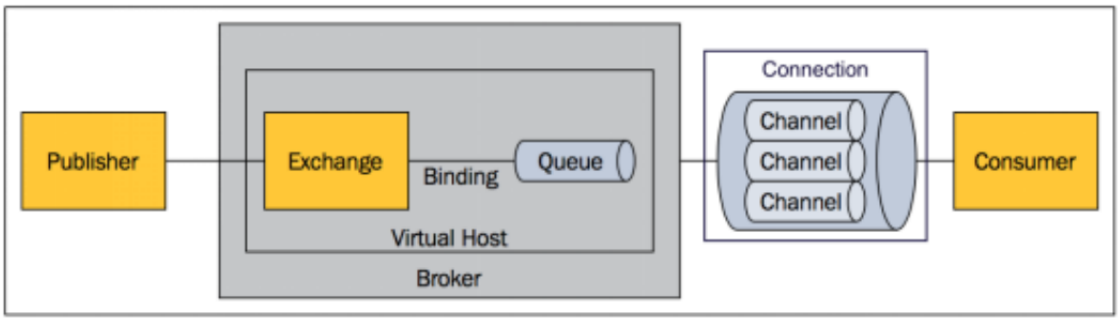
⑥：Connection
网络连接，比如一个TCP连接。

⑦：Channel
信道，多路复用连接中的一条独立的双向数据流通道。信道是建立在真实的TCP连接内的虚拟连接，AMQP 命令都是通过信道发出去的，不管是发布消息、订阅队列还是接收消息，这些动作都是通过信道完成。因为对于操作系统来说建立和销毁 TCP 都是非常昂贵的开销，所以引入了信道的概念，以复用一条 TCP 连接。

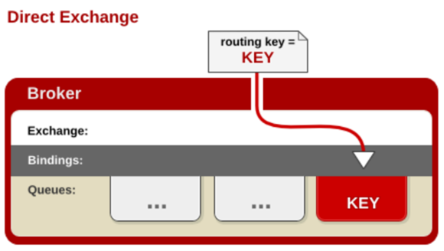
⑧：Consumer
消息的消费者，表示一个从消息队列中取得消息的客户端应用程序。

⑨：Virtual Host
虚拟主机，表示一批交换器、消息队列和相关对象。虚拟主机是共享相同的身份认证和加密环境的独立服务器域。每个 vhost 本质上就是一个 mini 版的 RabbitMQ 服务器，拥有自己的队列、交换器、绑定和权限机制。vhost 是 AMQP 概念的基础，必须在连接时指定，RabbitMQ 默认的 vhost 是 / 。

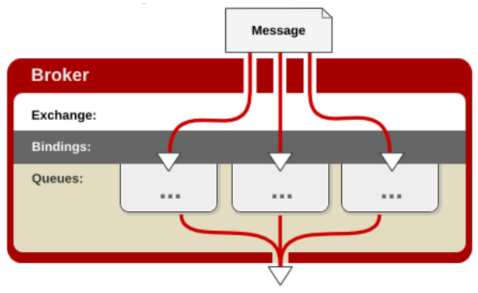
⑩：Broker
表示消息队列服务器实体



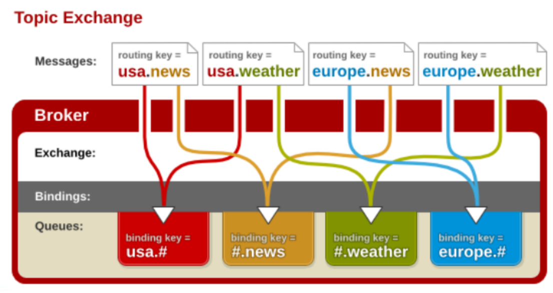
5.7.3）**交换机的特性以及分类**



消息中的路由键（routing key）如果和 Binding 中的 binding key 一致， 交换器就将消息发到对应的队列中。路由键与队列名完全匹配，如果一个队列绑定到交换机要求路由键为“dog”，则只转发 routing key 标记为“dog”的消息，不会转发“dog.puppy”，也不会转发“dog.guard”等等。它是完全匹配、单播的模式。



每个发到 fanout 类型交换器的消息都会分到所有绑定的队列上去。fanout 交换器不处理路由键，只是简单的将队列绑定到交换器上，每个发送到交换器的消息都会被转发到与该交换器绑定的所有队列上。很像子网广播，每台子网内的主机都获得了一份复制的消息。fanout 类型转发消息是最快的。



topic 交换器通过模式匹配分配消息的路由键属性，将路由键和某个模式进行匹配，此时队列需要绑定到一个模式上。它将路由键和绑定键的字符串切分成单词，这些**单词之间用点隔开**。它同样也会识别两个通配符：符号“#”和符号“*”。*#匹配0个或多个单词，**匹配一个单词。

5.7.4) **整合三板斧**

①:导入maven依赖

```
          <dependency>
                <groupId>org.springframework.boot</groupId>
                <artifactId>spring-boot-starter-amqp</artifactId>
          </dependency>
```

②:查看自动配置以及对应的自动配置属性类

```
@Configuration
@ConditionalOnClass({ RabbitTemplate.class, Channel.class })
@EnableConfigurationProperties(RabbitProperties.class)
@Import(RabbitAnnotationDrivenConfiguration.class)
public class RabbitAutoConfiguration {

    @Configuration
    @ConditionalOnMissingBean(ConnectionFactory.class)
    protected static class RabbitConnectionFactoryCreator {


    //rabbitmq 连接工厂
        @Bean
        public CachingConnectionFactory rabbitConnectionFactory(RabbitProperties properties,ObjectProvider<Connec
                throws Exception {
            PropertyMapper map = PropertyMapper.get();
            //创建连接工厂
            CachingConnectionFactory factory = new CachingConnectionFactory(getRabbitConnectionFactoryBean(pro
            //连接地址
            map.from(properties::determineAddresses).to(factory::setAddresses);
            //生产端的消息确认
            map.from(properties::isPublisherConfirms).to(factory::setPublisherConfirms);
            //不可路由消息的处理
            map.from(properties::isPublisherReturns).to(factory::setPublisherReturns);
            //配置通信管道
            RabbitProperties.Cache.Channel channel = properties.getCache().getChannel();
            map.from(channel::getSize).whenNonNull().to(factory::setChannelCacheSize);
            map.from(channel::getCheckoutTimeout).whenNonNull().as(Duration::toMillis)
                    .to(factory::setChannelCheckoutTimeout);
            //配置管道缓存
            RabbitProperties.Cache.Connection connection = properties.getCache()
                    .getConnection();
            map.from(connection::getMode).whenNonNull().to(factory::setCacheMode);
            map.from(connection::getSize).whenNonNull()
                    .to(factory::setConnectionCacheSize);
            map.from(connectionNameStrategy::getIfUnique).whenNonNull()
                    .to(factory::setConnectionNameStrategy);
            return factory;
        }


    }

    @Configuration
    @Import(RabbitConnectionFactoryCreator.class)
    protected static class RabbitTemplateConfiguration {


    //模版配置类
        @Bean
        @ConditionalOnSingleCandidate(ConnectionFactory.class)
        @ConditionalOnMissingBean
        public RabbitTemplate rabbitTemplate(ConnectionFactory connectionFactory) {
            PropertyMapper map = PropertyMapper.get();
            RabbitTemplate template = new RabbitTemplate(connectionFactory);
            //配置消息转换器
            MessageConverter messageConverter = this.messageConverter.getIfUnique();
            if (messageConverter != null) {
                template.setMessageConverter(messageConverter);
            }
            //设置为true 那么不可达消息会交给RetrunConfirm 处理，若设置为false  消息队列直接删除该消息
            template.setMandatory(determineMandatoryFlag());
            //配置模版属性
            RabbitProperties.Template properties = this.properties.getTemplate();
            if (properties.getRetry().isEnabled()) {
                template.setRetryTemplate(createRetryTemplate(properties.getRetry()));
            }
            //设置超时时间
            map.from(properties::getReceiveTimeout).whenNonNull().as(Duration::toMillis)
                    .to(template::setReceiveTimeout);
            //配置 回复超时时间
            map.from(properties::getReplyTimeout).whenNonNull().as(Duration::toMillis)
                    .to(template::setReplyTimeout);
            //配置交换机
            map.from(properties::getExchange).to(template::setExchange);
            //配置路由key
            map.from(properties::getRoutingKey).to(template::setRoutingKey);
            return template;
        }

        private boolean determineMandatoryFlag() {
            Boolean mandatory = this.properties.getTemplate().getMandatory();
            return (mandatory != null) ? mandatory : this.properties.isPublisherReturns();
        }

        private RetryTemplate createRetryTemplate(RabbitProperties.Retry properties) {
            PropertyMapper map = PropertyMapper.get();
            RetryTemplate template = new RetryTemplate();
            SimpleRetryPolicy policy = new SimpleRetryPolicy();
```

```
			map.from(properties::getMaxAttempts).to(policy::setMaxAttempts);
			template.setRetryPolicy(policy);
			ExponentialBackOffPolicy backOffPolicy = new ExponentialBackOffPolicy();
			map.from(properties::getInitialInterval).whenNonNull().as(Duration::toMillis)
					.to(backOffPolicy::setInitialInterval);
			map.from(properties::getMultiplier).to(backOffPolicy::setMultiplier);
			map.from(properties::getMaxInterval).whenNonNull().as(Duration::toMillis)
					.to(backOffPolicy::setMaxInterval);
			template.setBackOffPolicy(backOffPolicy);
			return template;
		}

		@Bean
		@ConditionalOnSingleCandidate(ConnectionFactory.class)
		@ConditionalOnProperty(prefix = "spring.rabbitmq", name = "dynamic", matchIfMissing = true)
		@ConditionalOnMissingBean
		public AmqpAdmin amqpAdmin(ConnectionFactory connectionFactory) {
			return new RabbitAdmin(connectionFactory);
		}

	}

	@Configuration
	@ConditionalOnClass(RabbitMessagingTemplate.class)
	@ConditionalOnMissingBean(RabbitMessagingTemplate.class)
	@Import(RabbitTemplateConfiguration.class)
	protected static class MessagingTemplateConfiguration {

		@Bean
		@ConditionalOnSingleCandidate(RabbitTemplate.class)
		public RabbitMessagingTemplate rabbitMessagingTemplate(
				RabbitTemplate rabbitTemplate) {
			return new RabbitMessagingTemplate(rabbitTemplate);
		}

	}

}
```

③：在yml文件中 配置关键属性

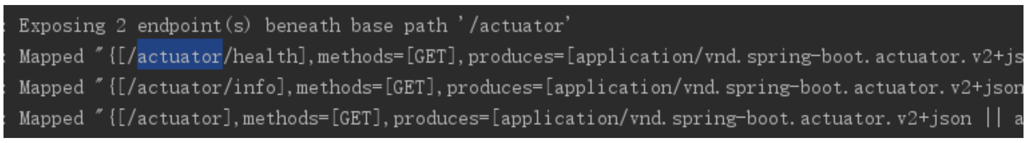
```
public class RabbitProperties {

	/**
	 * RabbitMQ host.
	 */
	private String host = "localhost";

	/**
	 * RabbitMQ port.
	 */
	private int port = 5672;

	/**
	 * Login user to authenticate to the broker.
	 */
	private String username = "guest";

	/**
	 * Login to authenticate against the broker.
	 */
	private String password = "guest";

	/**
	 * SSL configuration.
	 */
	private final Ssl ssl = new Ssl();

	/**
	 * Virtual host to use when connecting to the broker.
	 */
	private String virtualHost;

	/**
	 * Comma-separated list of addresses to which the client should connect.
	 */
	private String addresses;

	/**
	 * Requested heartbeat timeout; zero for none. If a duration suffix is not specified,
	 * seconds will be used.
	 */
	@DurationUnit(ChronoUnit.SECONDS)
	private Duration requestedHeartbeat;

	/**
	 * Whether to enable publisher confirms.
	 */
	private boolean publisherConfirms;

	/**
	 * Whether to enable publisher returns.
	 */
	private boolean publisherReturns;

	/**
	 * Connection timeout. Set it to zero to wait forever.
	 */
	private Duration connectionTimeout;

	/**
	 * Cache configuration.
	 */
	private final Cache cache = new Cache();

	/**
	 * Listener container configuration.
	 */
	private final Listener listener = new Listener();

	private final Template template = new Template();

	private List<Address> parsedAddresses;


#可配置常用属性
spring:
  rabbitmq:
    host: 47.104.128.10
    port: 5672
    virtual-host: tulingvip-springboot-rabbitmq
    username: guest
    password: guest
    connection-timeout: 5000
    template:
      mandatory: true
```

6)springboot**整合** actuator **监控管理**

通过引入spring-boot-starter-actuator，可以使用Spring Boot为我们提供的准
生产环境下的应用监控和管理功能。我们可以通过HTTP，JMX，SSH协议来进
行操作，自动得到审计、健康及指标信息等

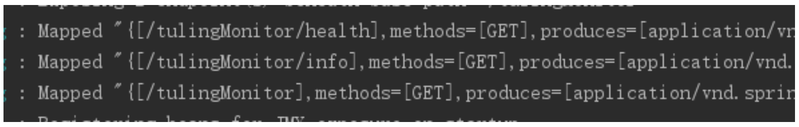
6.1)**监控访问路径前缀**

management.endpoints.web.base-path=/actuator　这个是springboot监控默认的 我们可以修改为自己的



```
Exposing 2 endpoint(s) beneath base path '/actuator'
Mapped "{[/actuator/health],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+js
Mapped "{[/actuator/info],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json
Mapped "{[/actuator],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || a
```

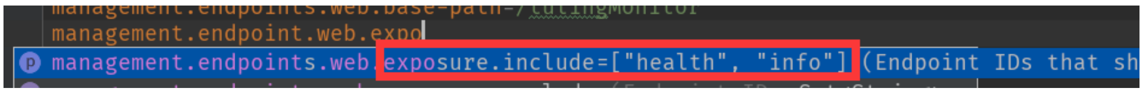
management.endpoints.web.base-path=/tulingMonitor



```
: Mapped "{[/tulingMonitor/health],methods=[GET],produces=[application/vn
: Mapped "{[/tulingMonitor/info],methods=[GET],produces=[application/vnd.
: Mapped "{[/tulingMonitor],methods=[GET],produces=[application/vnd.sprin
```

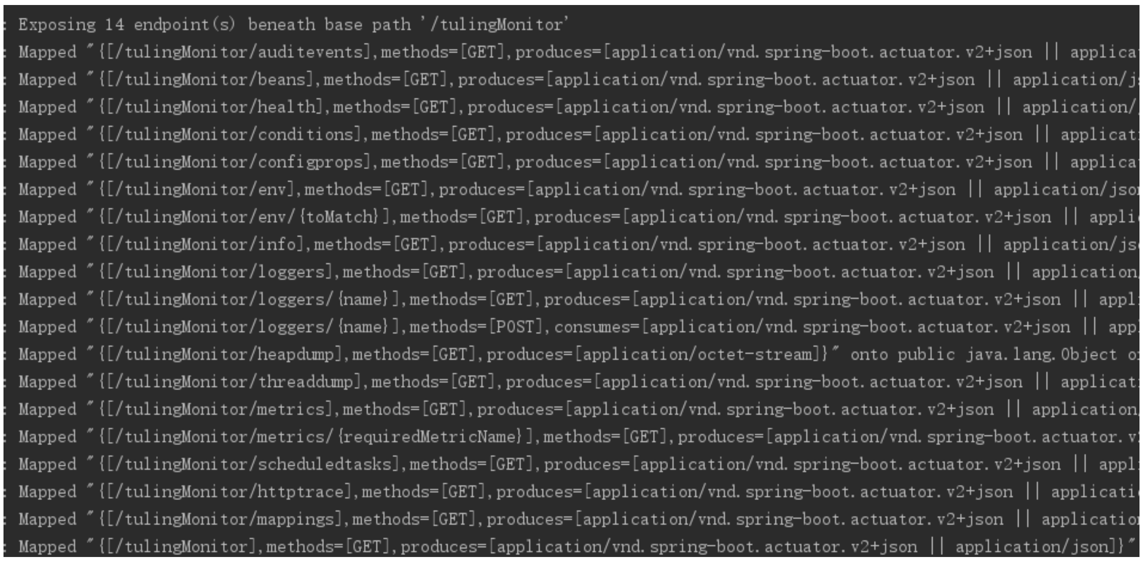
总结 不管监控路径 是默认的还是 自己修改的，为了安全起见，必须要通过spring security **来控制访问权限以免暴露你的服务信息**

6.2) http **健康监控端点 默认只暴露了** health,info**端点**



```
management.endpoint.web.expo
management.endpoints.web.exposure.include=["health", "info"] (Endpoint IDs that sh
```

①:通过 management.endpoints.web.exposure.include=*　来指定开放所有的端点



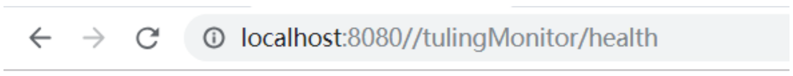
```
Exposing 14 endpoint(s) beneath base path '/tulingMonitor'
Mapped "{[/tulingMonitor/auditevents],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || applica
Mapped "{[/tulingMonitor/beans],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application/j
Mapped "{[/tulingMonitor/health],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application/
Mapped "{[/tulingMonitor/conditions],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || applicat
Mapped "{[/tulingMonitor/configprops],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || applica
Mapped "{[/tulingMonitor/env],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application/jso
Mapped "{[/tulingMonitor/env/{toMatch}],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || appli
Mapped "{[/tulingMonitor/info],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application/js
Mapped "{[/tulingMonitor/loggers],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application
Mapped "{[/tulingMonitor/loggers/{name}],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || appl
Mapped "{[/tulingMonitor/loggers/{name}],methods=[POST],consumes=[application/vnd.spring-boot.actuator.v2+json || app
Mapped "{[/tulingMonitor/heapdump],methods=[GET],produces=[application/octet-stream]}" onto public java.lang.Object o
Mapped "{[/tulingMonitor/threaddump],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || applicat
Mapped "{[/tulingMonitor/metrics],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application
Mapped "{[/tulingMonitor/metrics/{requiredMetricName}],methods=[GET],produces=[application/vnd.spring-boot.actuator.v
Mapped "{[/tulingMonitor/scheduledtasks],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || appl
Mapped "{[/tulingMonitor/httptrace],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || applicati
Mapped "{[/tulingMonitor/mappings],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || applicatio
Mapped "{[/tulingMonitor],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application/json]}"
```

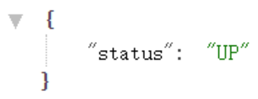
②:通过 management.endpoints.web.exposure.include=health,info,beans　通过逗号分开来指定开放哪些端点

或者也可以通过 management.endpoint.具体端点.enabled=true|false 来开放或者打开哪些端点

6.3)具体端点分析

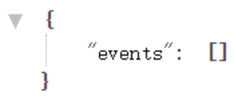
1)**服务监控端点** http://localhost:8080//tulingMonitor/health





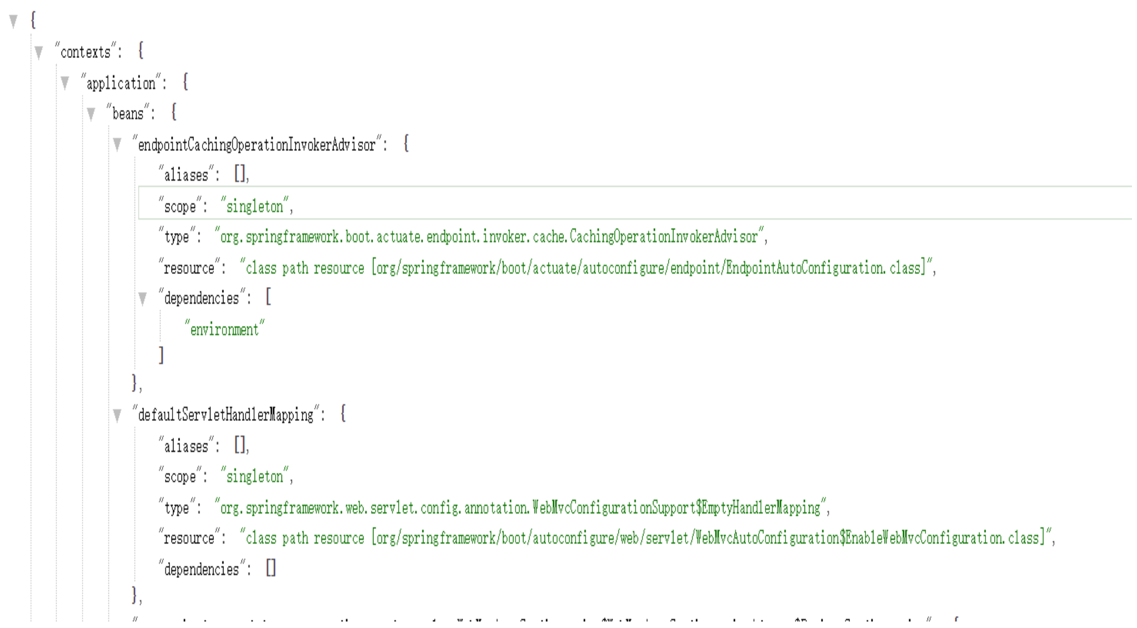
```
{
    "status": "UP"
}
```

2）**审计事件监控端点** http://localhost:8080//tulingMonitor/auditevents



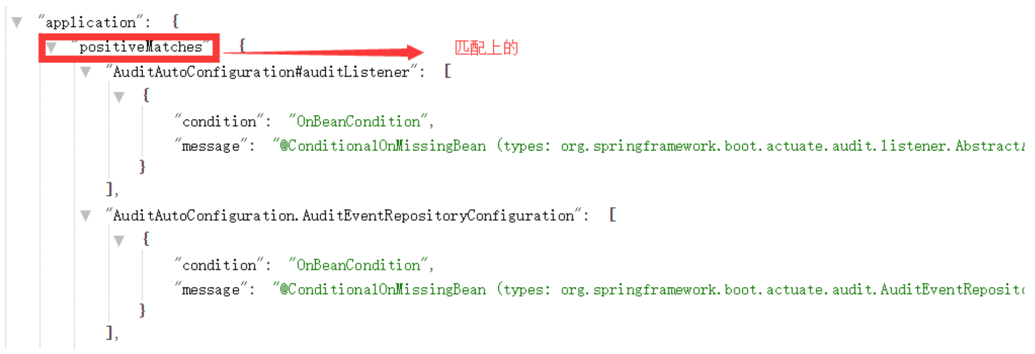
```
{
    "events": []
}
```

3) **服务装配**bean**的报告 端点**: http://localhost:8080//tulingMonitor/beans

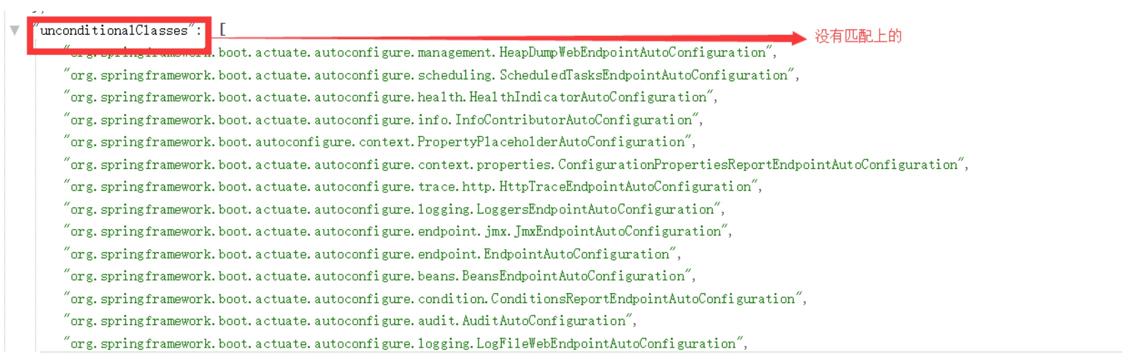


```
{
  "contexts": {
    "application": {
      "beans": {
        "endpointCachingOperationInvokerAdvisor": {
          "aliases": [],
          "scope": "singleton",
          "type": "org.springframework.boot.actuate.endpoint.invoker.cache.CachingOperationInvokerAdvisor",
          "resource": "class path resource [org/springframework/boot/actuate/autoconfigure/endpoint/EndpointAutoConfiguration.class]",
          "dependencies": [
            "environment"
          ]
        },
        "defaultServletHandlerMapping": {
          "aliases": [],
          "scope": "singleton",
          "type": "org.springframework.web.servlet.config.annotation.WebMvcConfigurationSupport$EmptyHandlerMapping",
          "resource": "class path resource [org/springframework/boot/autoconfigure/web/servlet/WebMvcAutoConfiguration$EnableWebMvcConfiguration.class]",
          "dependencies": []
        },
```

4) **条件自动装配报告端点**: http://localhost:8080//tulingMonitor/conditions

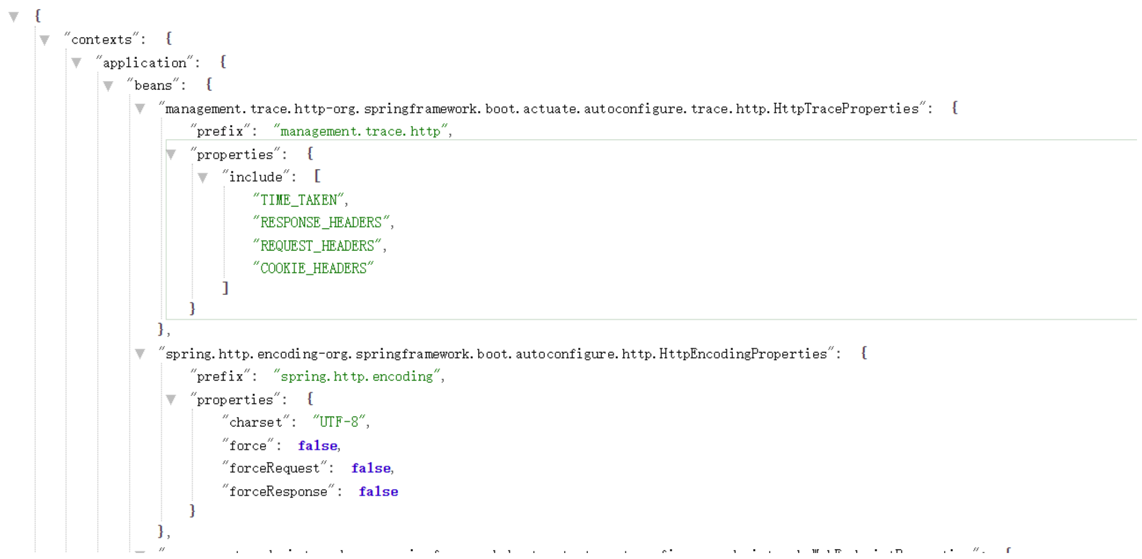


```
"application": {
  "positiveMatches": {
    "AuditAutoConfiguration#auditListener": [
      {
        "condition": "OnBeanCondition",
        "message": "@ConditionalOnMissingBean (types: org.springframework.boot.actuate.audit.listener.Abstract
      }
    ],
    "AuditAutoConfiguration.AuditEventRepositoryConfiguration": [
      {
        "condition": "OnBeanCondition",
        "message": "@ConditionalOnMissingBean (types: org.springframework.boot.actuate.audit.AuditEventReposit
      }
    ],
```



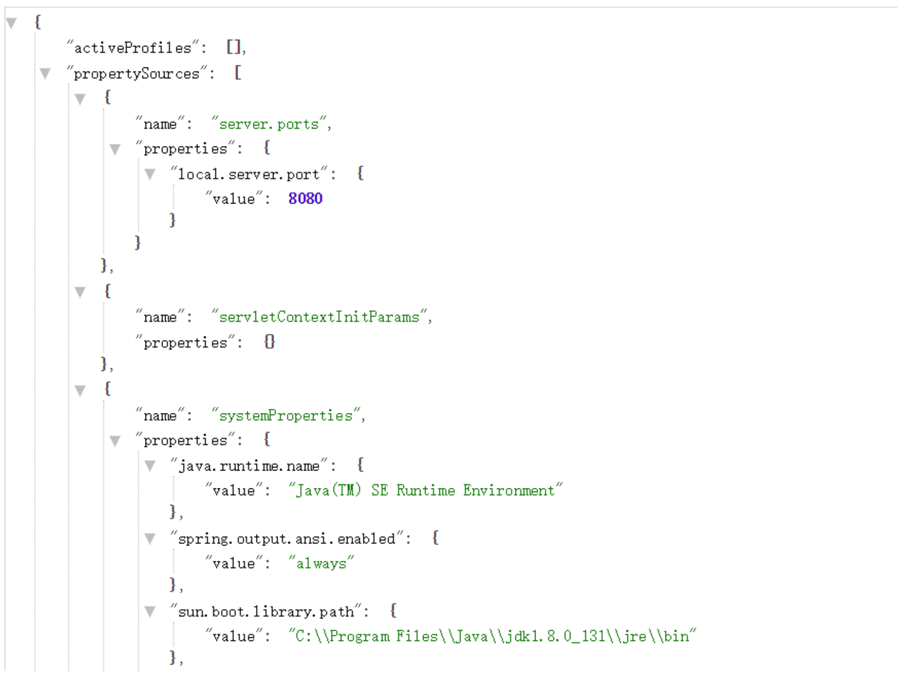
```
"unconditionalClasses": [
    "org.springframework.boot.actuate.autoconfigure.management.HeapDumpWebEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.scheduling.ScheduledTasksEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.health.HealthIndicatorAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.info.InfoContributorAutoConfiguration",
    "org.springframework.boot.autoconfigure.context.PropertyPlaceholderAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.context.properties.ConfigurationPropertiesReportEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.trace.http.HttpTraceEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.logging.LoggersEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.endpoint.jmx.JmxEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.endpoint.EndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.beans.BeansEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.condition.ConditionsReportEndpointAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.audit.AuditAutoConfiguration",
    "org.springframework.boot.actuate.autoconfigure.logging.LogFileWebEndpointAutoConfiguration",
```

5）**配置属性(配置前缀)端点** http://localhost:8080/tulingMonitor/configprops



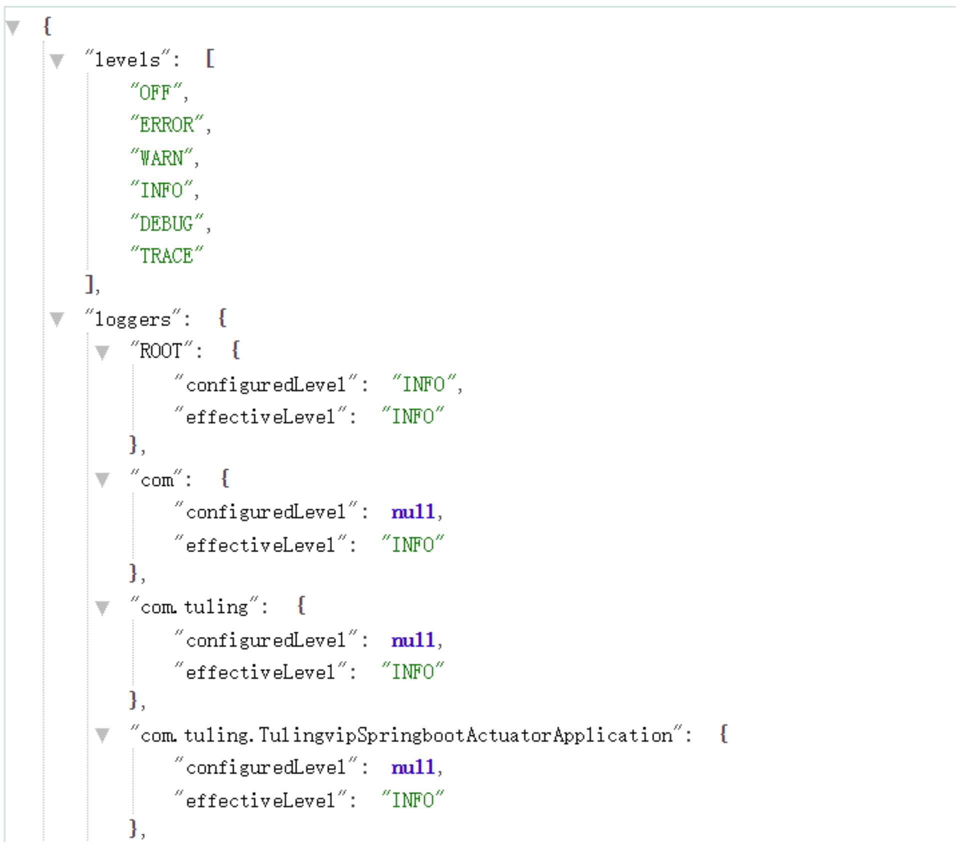
```
{
  "contexts": {
    "application": {
      "beans": {
        "management.trace.http-org.springframework.boot.actuate.autoconfigure.trace.http.HttpTraceProperties": {
          "prefix": "management.trace.http",
          "properties": {
            "include": [
              "TIME_TAKEN",
              "RESPONSE_HEADERS",
              "REQUEST_HEADERS",
              "COOKIE_HEADERS"
            ]
          }
        },
        "spring.http.encoding-org.springframework.boot.autoconfigure.http.HttpEncodingProperties": {
          "prefix": "spring.http.encoding",
          "properties": {
            "charset": "UTF-8",
            "force": false,
            "forceRequest": false,
            "forceResponse": false
          }
        },
```

6) **服务环境端点** http://localhost:8080/tulingMonitor/env



```
{
  "activeProfiles": [],
  "propertySources": [
    {
      "name": "server.ports",
      "properties": {
        "local.server.port": {
          "value": 8080
        }
      }
    },
    {
      "name": "servletContextInitParams",
      "properties": {}
    },
    {
      "name": "systemProperties",
      "properties": {
        "java.runtime.name": {
          "value": "Java(TM) SE Runtime Environment"
        },
        "spring.output.ansi.enabled": {
          "value": "always"
        },
        "sun.boot.library.path": {
          "value": "C:\\Program Files\\Java\\jdk1.8.0_131\\jre\\bin"
        },
```

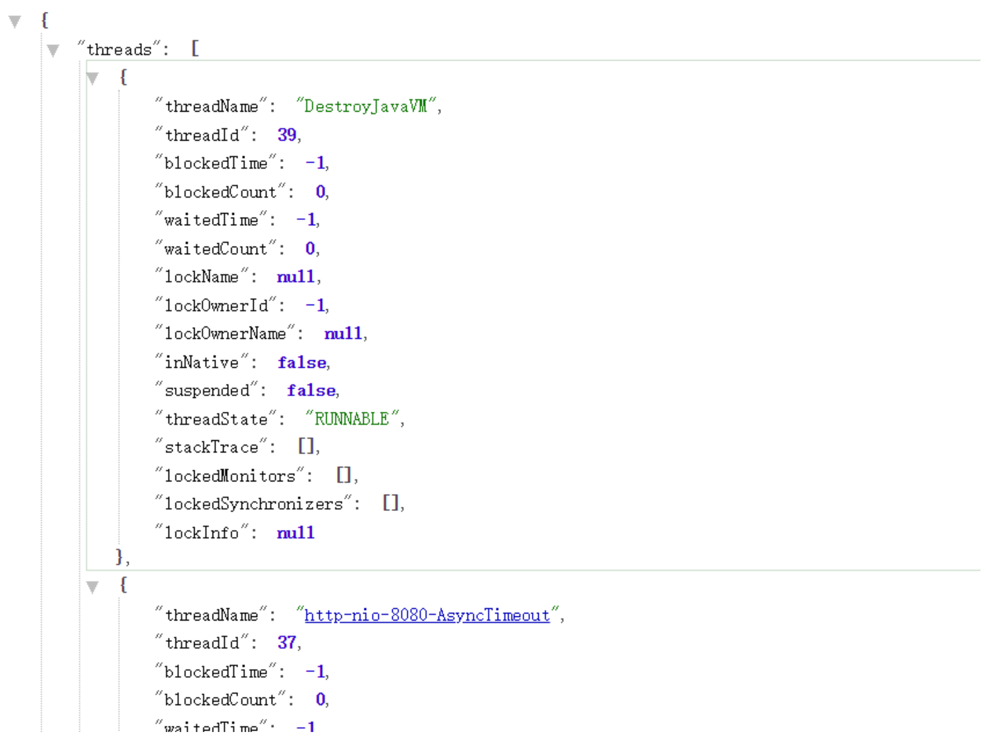
7)**应用 各个包 中的日志等级级别 端点** http://localhost:8080/tulingMonitor/loggers



```
{
  "levels": [
    "OFF",
    "ERROR",
    "WARN",
    "INFO",
    "DEBUG",
    "TRACE"
  ],
  "loggers": {
    "ROOT": {
      "configuredLevel": "INFO",
      "effectiveLevel": "INFO"
    },
    "com": {
      "configuredLevel": null,
      "effectiveLevel": "INFO"
    },
    "com.tuling": {
      "configuredLevel": null,
      "effectiveLevel": "INFO"
    },
    "com.tuling.TulingvipSpringbootActuatorApplication": {
      "configuredLevel": null,
      "effectiveLevel": "INFO"
    },
```

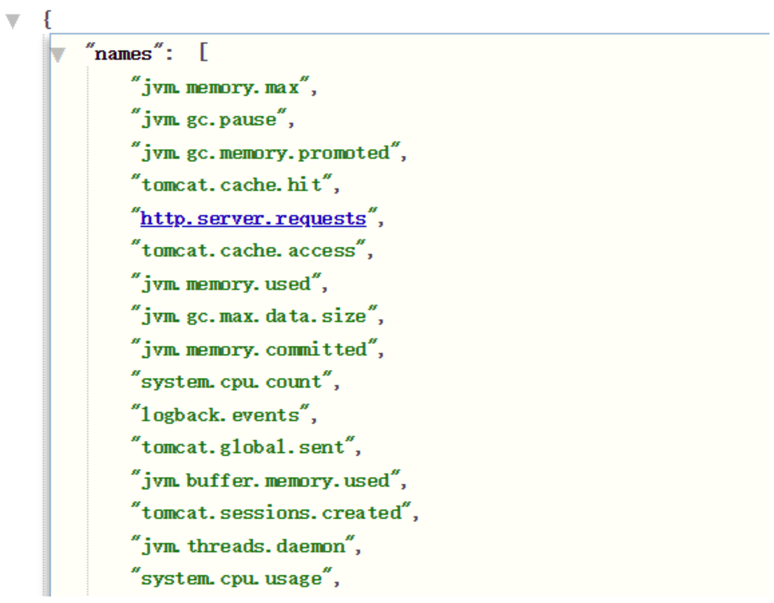
8）**应用堆栈端点** http://localhost:8080/tulingMonitor/heapdump **下载**

9）**线程dump端点监控** http://localhost:8080/tulingMonitor/threaddump



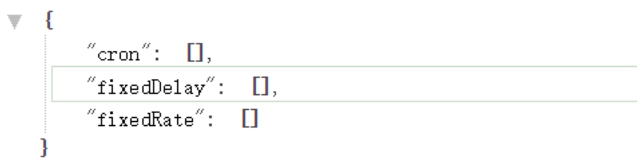
```
{
  "threads": [
    {
      "threadName": "DestroyJavaVM",
      "threadId": 39,
      "blockedTime": -1,
      "blockedCount": 0,
      "waitedTime": -1,
      "waitedCount": 0,
      "lockName": null,
      "lockOwnerId": -1,
      "lockOwnerName": null,
      "inNative": false,
      "suspended": false,
      "threadState": "RUNNABLE",
      "stackTrace": [],
      "lockedMonitors": [],
      "lockedSynchronizers": [],
      "lockInfo": null
    },
    {
      "threadName": "http-nio-8080-AsyncTimeout",
      "threadId": 37,
      "blockedTime": -1,
      "blockedCount": 0,
      "waitedTime": -1
```

10) **各项应用指标端点**: http://localhost:8080/tulingMonitor/metrics



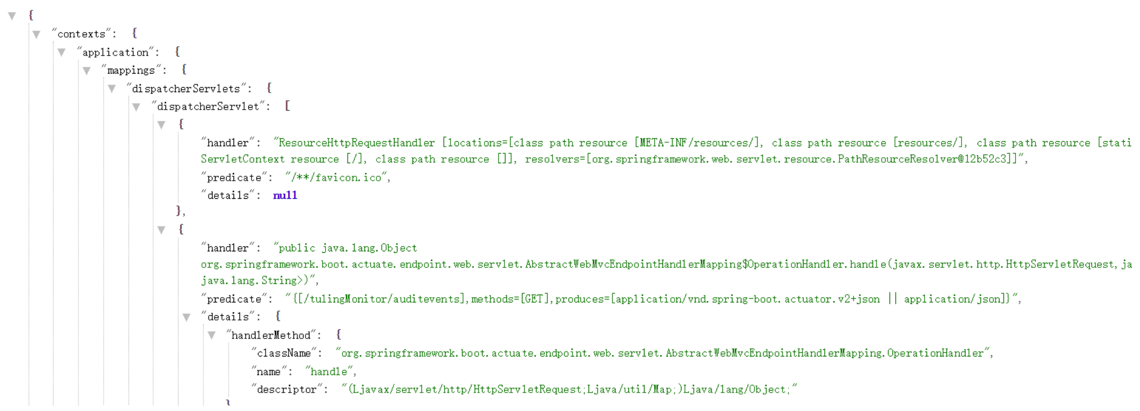
```
{
  "names": [
    "jvm.memory.max",
    "jvm.gc.pause",
    "jvm.gc.memory.promoted",
    "tomcat.cache.hit",
    "http.server.requests",
    "tomcat.cache.access",
    "jvm.memory.used",
    "jvm.gc.max.data.size",
    "jvm.memory.committed",
    "system.cpu.count",
    "logback.events",
    "tomcat.global.sent",
    "jvm.buffer.memory.used",
    "tomcat.sessions.created",
    "jvm.threads.daemon",
    "system.cpu.usage",
```

11)**定时任务端点** http://localhost:8080/tulingMonitor/scheduledtasks



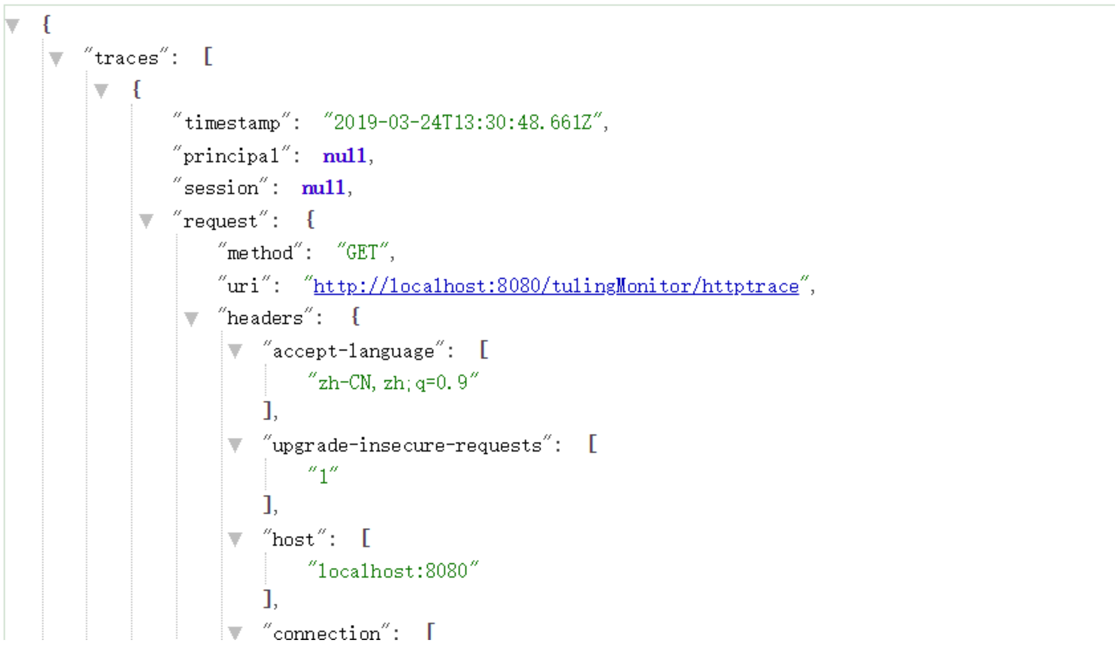
```
{
  "cron": [],
  "fixedDelay": [],
  "fixedRate": []
}
```

12) **应用映射端点** http://localhost:8080/tulingMonitor/mappings



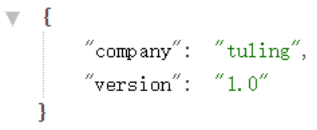
```
{
  "contexts": {
    "application": {
      "mappings": {
        "dispatcherServlets": {
          "dispatcherServlet": [
            {
              "handler": "ResourceHttpRequestHandler [locations=[class path resource [META-INF/resources/], class path resource [resources/], class path resource [stati
              ServletContext resource [/], class path resource []], resolvers=[org.springframework.web.servlet.resource.PathResourceResolver@12b52c3]]",
              "predicate": "/**/favicon.ico",
              "details": null
            },
            {
              "handler": "public java.lang.Object
              org.springframework.boot.actuate.endpoint.web.servlet.AbstractWebMvcEndpointHandlerMapping$OperationHandler.handle(javax.servlet.http.HttpServletRequest,ja
              java.lang.String>)",
              "predicate": "{[/tulingMonitor/auditevents],methods=[GET],produces=[application/vnd.spring-boot.actuator.v2+json || application/json]}",
              "details": {
                "handlerMethod": {
                  "className": "org.springframework.boot.actuate.endpoint.web.servlet.AbstractWebMvcEndpointHandlerMapping.OperationHandler",
                  "name": "handle",
                  "descriptor": "(Ljavax/servlet/http/HttpServletRequest;Ljava/util/Map;)Ljava/lang/Object;"
```

13）**最新调用 监控端点**: http://localhost:8080/tulingMonitor/httptrace



```
{
  "traces": [
    {
      "timestamp": "2019-03-24T13:30:48.661Z",
      "principal": null,
      "session": null,
      "request": {
        "method": "GET",
        "uri": "http://localhost:8080/tulingMonitor/httptrace",
        "headers": {
          "accept-language": [
            "zh-CN,zh;q=0.9"
          ],
          "upgrade-insecure-requests": [
            "1"
          ],
          "host": [
            "localhost:8080"
          ],
          "connection": [
```

14)**自定义信息端点**: http://localhost:8080/tulingMonitor/info



```
{
  "company": "tuling",
  "version": "1.0"
}
```